

78 THE BASIC OPEN-HEARTH STEEL PROCESS

Therefrom there is obtained from 100 kilogrammes gas coal from 24 to 41 cubic metres, and on an average 28 cubic metres lighting gas. As on the grounds before quoted more gas must be developed in the producer, it may be taken that one obtains 30 cubic metres gas ; 1 kilogramme yields, therefore, 0.3 cubic metre gas, and as the coal contains approximately 75 per cent. C, there results 0.4 cubic metre distillation gas from 1 kilogramme C of the coal. The mean composition of this is already given on p. 69, and on p. 73 it was found that 28.57 kilogrammes C. are contained in 100 cubic metres gas. Thus one obtains in 0.4 cubic metre gas, which is yielded from 1 kilogramme C in the gas coal, 0.4x0.2857=0.115 kilogramme C, i.e., about 0.12 kilogramme C, or in other words, 12 per cent, of the carbon contained in the fuel is carried off in the form of gas, and consequently 0.88 kilogramme C, or 88 per cent, of the C, remain over for gasification into steam-air gas. On this assumption, and the composition of distillation gas assumed on p. 69, as well as that of the best steam-air gas (in this case taken as being produced from cold air, vide formula 22, p. 63), one can easily calculate the composition of the best producer gas in good gas coal per kilogramme C at : —

» 0.02+OH, (H+H²O+N₂)=0.42
 -ah gas '75=4' <5
 C³ +5+CO 1.03+0»H» 0.02+CH, (H₂+H₂O)

The combustible value of this gas is 7,554 calories.

Since the combustible value of steam-air gas from pure C only amounts to 6,200 calories, the combustible value taken on 1 kilogramme C is thus increased by the content of bituamen in the raw fuel, by 1,350 calories, or more than 20 per cent.

The volumetric composition of the producer gas is thus CO₂ 1.0 per cent.+CO 32.5 per cent. + O₂ 0.4 per cent. +